

REMARKS

In an Office Action dated January 2, 2009, the Examiner rejected claims 1-10, 29-36, and 38-39 under 35 U.S.C. §103(a) as being unpatentable over Luschi et al. (U.S. patent application publication no. 2003/0045288, hereinafter referred to as “Luschi”) in view of Kadaba et al. (U.S. patent no. 7,158,504, hereinafter referred to as “Kadaba”) and further in view of Hwang et al. (U.S. patent no. 7,047,473, hereinafter referred to as “Hwang”). The Examiner rejected claims 41-44 and 46-49 under 35 U.S.C. §103(a) as being unpatentable over Kadaba in view of Gopalakrishnan et al. (U.S. patent no. 6,836,666, hereinafter referred to as “Gopalakrishnan”), rejected claims 45 and 50 over Luschi in view of Kadaba, and objected to claim 37, 40, 53, and 54 as being dependent upon a rejected base claim but as being allowable if rewritten in independent form including the limitations of the base claim and any intervening claims. The Examiner allowed claims 11-28. The rejections are traversed and reconsideration is hereby respectfully requested.

The applicants thank the Examiner for the allowance of claims 11-28.

Also, the applicants are canceling claims 2, 10, 13, 22, 35, 44, 49, 53, and 54 and adding new claims 55-63.

Rejection of independent claims 1 and 29 under 35 U.S.C. §103(a) as being unpatentable over Luschi in view of Kadaba and Hwang

The Examiner rejected claims 1-10, 29-36, and 38-39 under 35 U.S.C. §103(a) as being unpatentable over Luschi in view of Kadaba and further in view of Hwang. With respect to claim 1, the Examiner contended that Luschi teaches teaches a method for scheduling mobile station (MS) uplink transmissions by a base station (BS) (Abstract, FIG. 1, paragraphs 0014 and 0026) that includes receiving scheduling information from at least one MS of multiple MSs, wherein the scheduling information comprises at least one of a queue status and a power status of the at least one MS (paragraphs 0015-0016, 0021-0022, 0042, 0047, and 0056-0057) and selecting an MS of the multiple MSs and determining an uplink channel scheduling assignment for the selected MS using at least one of the scheduling information and a link quality corresponding to the selected MS

(paragraphs 0027, 0045-0046, and 0054-0055). The Examiner acknowledged that Luschi does not teach a BS interference metric but contended that this is taught by Kadaba. And the Examiner acknowledged that neither Luschi nor Kadaba teach transmitting the uplink channel scheduling assignment to the selected MS, wherein the uplink channel scheduling assignment comprises a maximum power ratio that the MS is allowed to use in a subsequent reverse link transmission, but contended that this is taught by Hwang (col. 8, lines 53-67; col. 9, lines 1-5 and 50-58). The applicants respectfully disagree with the Examiner's application of the cited art.

Hwang teaches a receiver transmitting control information to a transmitter that reflects a quality of signals received by the receiver (col. 8, lines 53-67, and col. 9, lines 1-5). In particular, column 9, lines 50-58, and column 10, lines 1-34, of Hwang teach that if the transmitted signal is erroneously received, the receiver compares a received signal quality, preferably a signal-to-interference ratio (SIR), to an SIR threshold. If the signal quality is good (the SIR exceeds the threshold) then the receiver merely NAKs the signal. If the signal quality is poor (the SIR is less than the threshold), then the receiver sends control information along with the NAK, such as time delay or transmission power information. However, the transmission power information dictates a power level to the transmitter, that is, it is a command to either increase or decrease the transmission power (see column 10, lines 9-13 and 28-30).

By contrast, claim 1 teaches providing an MS (equated to the transmitter of Hwang) with a maximum traffic channel to control channel power ratio, rather than commanding a power level change by an MS. By providing the MS with a maximum traffic channel to control channel power ratio, the MS is able to select a scheduling scheme to use with respect to an uplink transmission that can achieve a desired quality of service (QoS). That is, the QoS is a function of, among other factors, a modulation and coding scheme and a transmit power level. By knowing a maximum traffic channel to control channel power ratio available at one or more serving base stations (BSs), the scheduling function can be distributed to the MS, which then can select one of many alternative, appropriate modulation and coding schemes that, given the power constraints, can achieve the desired QoS while staying within the power constraint. Conveying a maximum traffic channel to control channel power ratio to the transmitter

would make little sense in Hwang since such a ratio does not indicate a quality of the received signal nor provide the transmitter with an instruction of how to adjust a next transmission.

Therefore, none of Luschi, Kadaba, or Hwang teaches the features of claim 1 of transmitting an uplink channel scheduling assignment to a selected MS, wherein the uplink channel scheduling assignment includes a maximum traffic channel to control channel power ratio that the MS is allowed to use in a subsequent transmission. Accordingly, the applicants respectfully request that claim 1 may now be passed to allowance.

Since claims 2-10 and 55-59 depend upon allowable claim 1, the applicants respectfully request that claims 2-10 and 55-59 also may be passed to allowance.

Claim 29, as amended, teaches a method for transmitting data by an MS that includes receiving, at the MS, interference information associated with, and conveyed to the MS by, a BS and selecting, by the MS, a modulation and coding scheme based on the received interference information. In rejecting claim 29, the Examiner contended that Luschi teaches determining, by an MS, TFRI based on received interference information (paragraphs 0046, 0047, 0049, 0050, 0062, and 0066). The Examiner acknowledged that neither Luschi nor Kadaba teaches receiving, at an MS, interference information associated with, and conveyed to the MS by, a BS; however, the Examiner contended that this is taught by Hwang (col. 8, lines 53-67; col. 9, lines 1-5 and 50-58). The applicants respectfully disagree with the application of the cited references to claim 29.

Claim 29 teaches an MS selecting, based on received interference information, a modulation and coding scheme for a reverse link transmission. That is, the MS transmits an indicator of the selected modulation and coding scheme in a second reverse link channel, which modulation and coding scheme is used to demodulate and decode data that is transmitted in a first reverse link channel. Nowhere is this taught by Luschi. Paragraphs 0046, 0049, 0050, and 0062 of Luschi all concern forward link (downlink) transmissions, not reverse link (uplink) transmissions. Further, these paragraphs merely teach a BS conveying a TFCI to a UE scheduled for a Downlink Shared Channel

(DSCH) transmission, which TFCI provides the downlink control information. The MS merely uses the TFCI dictated to it; the MS does not make any selection of a TCFI, let alone a selection based on interference information received from a BS. Paragraph 0047 of Luschi teaches a BS conveying to an MS a modulation and coding scheme to be used to uplink transmissions. Again, the MS is dictated, and does not select, the modulation and coding scheme. And paragraph 0066 of Luschi does not teach any conveyance of a modulation and coding scheme to the MS.

Claim 29 teaches a distributed scheduling scheme, wherein the MS is able to select a modulation and coding scheme to use with respect to an uplink transmission such that the uplink transmission can achieve a desired quality of service (QoS), as QoS is a function of, among other factors, the modulation and coding scheme selected by the MS. No such distributed scheduling scheme is taught by Luschi, Kadaba, or Hwang. Accordingly, the applicants respectfully request that claim 29 may now be passed to allowance.

Since claims 30-34 and 36-40 depend upon allowable claim 29, the applicants respectfully request that claims 30-34 and 36-40 also may be passed to allowance.

Rejection of independent claims 41 and 46 under 35 U.S.C. §103(a) as being unpatentable over Kadaba in view of Golpalakrishnan

The Examiner rejected claims 41-44 and 46-49 under 35 U.S.C. §103(a) as being unpatentable over Kadaba in view of Gopalakrishnan. Specifically, with respect to claim 41, the Examiner contended that Kadaba teaches a method for controlling communications with an MS by a BS comprising steps of storing, by the BS, traffic data from the MS in a traffic data buffer (col. 4, line 56, to col. 5, line 17), determining a link quality metric at the BS (col. 5, lines 18-51), and flushing the traffic data buffer (col. 12, line 14, to col. 13, line 7). The Examiner acknowledged that Kadaba does not teach comparing a link quality metric to a threshold and the link quality metric comparing unfavorably with the threshold; however, the Examiner contended that these features are taught by Gopalakrishnan (col. 4, line 43, to col. 5, line 29; col. 6, lines 24-43). The applicants respectfully disagree.

In column 5, lines 18-51, Kadaba teaches an MS reporting downlink pilot strength back to a BS. And in column 12, line 14, to column 13, line 7, Kadaba teaches a BS flushing its traffic data buffer in response to receipt of an instruction from an MS to do so. Nothing here teaches a flushing based on an uplink signal quality metric determined by the BS. Gopalakrishnan, in the sections cited by the Examiner, teaches a BS measuring a total received signal power from all MSs serviced by the BS, to determine if the BS has any received signal power margin to schedule an additional MS. This measurement has nothing to do with any flushing of a buffer but instead concerns whether additional MSs may be admitted. Nothing here teaches a BS self-determining to flush a buffer based on measurements at the BS. Therefore, neither Kadaba nor Gopalakrishnan teaches the features of claim 41 of storing, by the BS, traffic data from the mobile station in a traffic data buffer and when an uplink signal quality metric determined at the BS compares unfavorably with a threshold, flushing the traffic data buffer. Accordingly, the applicants respectfully request that claim 41 may now be passed to allowance.

Since claims 42-44 depend upon allowable claim 41, the applicants respectfully request that claims 42-44 also may be passed to allowance.

Claim 46 has been amended to include the features of ‘objected to’ claim 53 and claim 53 has been canceled. Accordingly, the applicants respectfully request that claim 46 may now be passed to allowance.

Since claims 47-49 depend upon allowable claim 46, the applicants respectfully request that claims 47-49 also may be passed to allowance.

Rejection of independent claims 45 and 50 under 35 U.S.C. §103(a) as being unpatentable over Luschi in view of Kadaba

With respect to claim 45, the Examiner contended that Luschi teaches a method for controlling communications with an MS by a BS including steps of storing, by a BS, traffic data from an MS in a traffic data buffer (paragraphs 0047 and 0056). The Examiner acknowledged that Luschi does not teach transmitting, by the BS, first control data to the MS on a downlink control channel, upon transmitting the first control data,

starting, by the BS, a timer, and when a predetermined period of time expires prior to receiving second control data from the MS on an uplink control channel, flushing the traffic data buffer. However, the Examiner contended that these features are taught by Kadaba (col. 10, line 27, to col. 11, line 13; col. 12, line 14, to col. 13, line 7). The applicants respectfully disagree.

Column 10, line 27, to column 11, line 13, of Kadaba teaches an MS that transmits traffic data, sets a timer, waits for an acknowledgment, and re-transmits old data (if no acknowledgement) or transmits new data (if an acknowledgement is received). By contrast, the teachings of claim 45 concern the other end of the air interface and data transmission, that is, a BS that stores traffic data received from an MS in a traffic data buffer, sets a timer, waits for control data from the MS, and then flushes the buffer. Column 12, lines 14-42, and column 12, line 43, to column 13, line 7, of Kadaba both sections teach a BS flushing a buffer in response to receiving a command to do so from the MS, not due to an expiration of a timer at the BS. These teachings of Kadaba require a buffer flush instruction from the MS. The teachings of claim 45 do not.

Therefore, neither Luschi nor Kadaba, individually or in combination, teaches the features of claim 45 of storing, by the BS, traffic data from an MS in a traffic data buffer, starting, by the BS, a timer upon transmitting control data to the MS, and flushing the traffic data buffer when the timer expires prior to receiving control data from the MS. Accordingly, the applicants respectfully request that claim 45 may now be passed to allowance.

Claim 50 has been amended to include the features of 'objected to' claim 54 and claim 54 has been canceled. Accordingly, the applicants respectfully request that claim 50 may now be passed to allowance.

As the applicants have overcome all substantive rejections and objections given by the Examiner and have complied with all requests properly presented by the Examiner, the applicants contend that this Amendment, with the above discussion, overcomes the Examiner's objections to and rejections of the pending claims. Therefore, the applicants respectfully solicit allowance of the application. If the Examiner is of the

opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter. Furthermore, please charge any additional fees (including any extension of time fees), if any are due, or credit overpayment to Deposit Account No. 50-2117.

Respectfully submitted,
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